

Claims

1. A valve assembly, in particular for a fuel injection system of an internal combustion engine, including an adjustably disposed valve element (32), including an actuator unit (20), in particular piezoelectric, for adjusting the valve element (32), a hydraulic force transmission chamber (28), disposed in the force transmission path between the actuator unit (20) and the valve element (32), and a hydraulic pressure distributor assembly (50, 52) for diverting at least one hydraulic filling stream, to be delivered to the force transmission chamber (20) for filling it, from a hydraulic mainstream, wherein the pressure distributor assembly (50, 52) has a conduit system (46, 48), embodied in a conduit housing (14) and having a main conduit (46) leading to the hydraulic mainstream and at least one filling conduit (48), carrying the hydraulic filling stream and branching off from the main conduit (46); wherein the pressure distributor assembly (50, 52), viewed in the flow direction of the hydraulic mainstream, forms one hydraulic throttling region (50, 52) each, on both sides of the branching point of the filling conduit (48) from the main conduit (46), for the hydraulic mainstream; and wherein at least one of the throttling regions (50, 52) is embodied as a throttle bore (50a, 52a; 50b, 52b; 52c).
2. The valve assembly of claim 1, characterized in that at least the throttling region (52) located downstream of the

branching point is embodied as a throttle bore (52a; 52b; 52c).

3. The valve assembly of claim 2, characterized in that the throttling region (50) located upstream of the branching point is also embodied as a throttle bore (50a; 50b).

4. The valve assembly of one of claims 1-3, characterized in that at least one of the throttling regions (50, 52) is formed by a throttle bore (50a, 52a; 50b), which is embodied in a throttle body (54a, 56a; 54b) produced separately from and retained solidly on the conduit housing (14a; 14b).

5. The valve assembly of claim 4, characterized in that the throttle body (54a, 56a; 54b) is embodied as a flat throttle disk with a central throttle bore (50a, 52a; 50b).

6. The valve assembly of claim 4 or 5, characterized in that the throttle body (54a, 56a; 54b) is inserted into a larger-diameter portion of the main conduit (46a; 46b) and is braced on a transitional step (58a, 60a; 58b) to a smaller-diameter portion of the main conduit (46a; 46b).

7. The valve assembly of claim 6, characterized in that the throttle body (54a, 56a; 54b) is fixed to the transitional step (58a, 60a; 58b) by means of a screw body (64a, 70a; 70b) screwed into the main conduit (46a; 46b), and the screw body (64a, 70a; 70b) forms an essentially unthrottled flow passage,

preferably forming a central through bore (66a, 72a; 72b), for the hydraulic mainstream.

8. The valve assembly of claim 7, characterized in that the throttle body (54a; 54b) forms the throttling region located upstream of the branching point, and that a filtering element (74a; 74b) for filtering the hydraulic mainstream is retained in the main conduit (46a; 46b) between the screw body (70a; 70b) and the throttle body (54a; 54b).

9. The valve assembly of claim 8, characterized in that the filtering element (74a; 74b) is impermeable to the hydraulic fluid, and a filter gap, in particular an annular filter gap, is defined between the outer circumferential jacket of the filtering element (74a; 74b) and the conduit wall of the main conduit (46a; 46b).

10. The valve assembly of one of claims 1-9, characterized in that one (52) of the throttling regions (50, 52), in particular the throttling region (52) located downstream of the branching point, is formed by a throttle bore (52b; 52c) machined into the material comprising the conduit housing (14b; 14c).

11. The valve assembly of claim 10, characterized in that the throttle bore (52b; 52c) is disposed near the outside of a housing body of the conduit housing (14b; 14c).

12. The valve assembly of claim 10 or 11, characterized in that the throttle bore (52b; 52c) is produced by laser drilling.

13. The valve assembly of one of claims 1-12, characterized in that one (52) of the throttling regions (50, 52), in particular the throttling region (52) located downstream of the branching point, is formed by a throttle bore (52c), and that for forming the other throttling region (50), in particular the throttling region (50) located upstream of the branching point, a throttle pin (80c) is inserted into the main conduit (46c), which between its pin jacket and the conduit wall of the main conduit (46c) defines a throttle gap.

14. The valve assembly of claim 13, characterized in that the branching point is disposed inside the conduit housing (14c), and in the region of the branching point the main conduit (46c) has a cross-sectional enlargement (86c), the cross-sectional enlargement (86c) preferably being produced by electrochemical erosion.

15. The valve assembly of one of claims 1-14, characterized in that the main conduit (46) branches off from a fuel supply line (16) that serves to deliver fuel to an injection nozzle of the engine.